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## Part Numbers Affected

AP9465
AP9470
AP9475
AP94VMTRL

## Minimum System Requirements

The StruxureWare Data Center Expert console is a stand-alone Java application that runs on systems that meet the following requirements:

- A PC with a 1-GHz or better AMD/Intel processor running a 64-bit operating system: Microsoft® Windows® Server 2012 or 2016, Windows 10; Red Hat® Enterprise Linux® version 6.0; CentOS 6
  - At least 2 GB of RAM and 20 GB disk space
  - Screen resolution should be set to at least 1024 x 768.
  - Supported browsers: Microsoft Internet Explorer® 11; Microsoft Edge; Mozilla® Firefox®; Google Chrome™
- Note:** See Known Issues for details about support for Internet Explorer and Edge.

## New Features

### Data Center Expert v7.8.1 New Features

The v7.8.1 release contains security updates and various fixes. See Issues Fixed.

### Software vulnerabilities fixed in v7.8.1

- [CVE-2020-10188](#) – Telnet server
- [CVE-2017-1000371](#) – Kernel: ELF PIE binary on i386 systems
- [CVE-2019-17666](#) – Kernel: RealTek wireless drivers
- [CVE-2019-17133](#) – Kernel: WiFi ESSID
- [CVE-2019-17055](#) – Kernel: AF\_ISDN protocol
- [CVE-2019-14821](#) – Kernel: KVM hypervisor
- [CVE-2015-9381](#) – FreeType buffer over-read
- [CVE-2015-9382](#) – FreeType buffer over-read

[CVE-2019-11745](#) – Buffer overflow  
[CVE-2020-8616](#) – BIND flaw  
[CVE-2020-8617](#) – BIND flaw  
[CVE-2020-10711](#) – Kernel: SELinux  
[CVE-2017-12192](#) – Kernel: Key Management  
[CVE-2019-18634](#) – Sudo flaw

See the [Data Center Expert Security](#) section in the Help Center for more information.

### Data Center Expert v7.8.0 New Features

- **California state legislature security updates for network-connected devices**  
Data Center Expert was updated to comply with California law for the security of connected devices.

HTTP is disabled by default. HTTPS is the default.

New versions of the APC Network Management Card (NMC) firmware have the SNMP protocol disabled by default. You cannot discover devices with this new NMC firmware in Data Center Expert until you enable SNMP on the device. [More information](#)

**Note:** The SNMP settings on previously discovered devices are not affected by a firmware update to a version that contains these security updates.

### Software vulnerabilities fixed in v7.8.0

[CVE-2019-11810](#) – Kernel: NULL pointer can lead to DoS  
[CVE-2018-9568](#) – Kernel: Possible escalation of privileges  
[CVE-2019-11135](#) – TSX transactions

See the [Data Center Expert Security](#) section in the Help Center for more information.

### Data Center Expert v7.7.1 New Features

- **Updated support for Linux**  
You can now install the Data Center Expert client on RHEL 6.0 and CentOS 6.
- **Improved performance in the installed client**  
Loading times for sensors, thresholds, and device alarms are now faster in the installed client.
- **Improved reports in the web client**  
Saved reports in the web client now support 100 sensors.
- **Improved alarm resolution in the web client**  
You can now manually resolve threshold alarms in the web client.



## Software vulnerabilities fixed in v7.7.1

[CVE-2019-11479](#) - Default MSS hard-coded to 48 bytes

[CVE-2019-5489](#) - Page cache access

[CVE-2019-3896](#) - Privilege escalation DoS

[CVE-2019-3863](#) - Out of bounds memory write error

[CVE-2018-17972](#) - Kernel task stack contents

[CVE-2017-17805](#) - Zero-length inputs

SACK:

[CVE-2019-11477](#) - Integer overflow in TCP Selective Acknowledgment (SACK) sequence

[CVE-2019-11478](#) - TCP Selective Acknowledgment (SACK) sequence retransmission queue

## Data Center Expert v7.7.0 New Features

- **Enhancements to Maps**

You can now improve the performance of the Data Center Expert client by modifying or disabling maps. You can configure whether devices and sensors are automatically placed on maps in the System > Server Administration Settings > Map Settings option or disable Map View if you are not using it.

- **NetBotz 750 appliance support**

You can now configure settings that allow the cameras connected to NetBotz 750 appliances to be discovered.

NetBotz 750 must be firmware version 5.2.x or greater. For complete instructions, see [NetBotz 750 Appliance discovery](#) in the Help Center.

Device configuration and rack access are not supported at this time.

- **Web client timeout**

You can now select an option on the Home page to remain active to avoid being disconnected after 15 minutes of being idle.

- **Web client default refresh for gadgets**

To improve performance, the default refresh rate for gadgets is now 5 minutes instead of 30 seconds. This affects newly created gadgets only.

## Software vulnerabilities fixed in v7.7.0

[CVE-2018-14634](#) - Kernel privilege escalation vulnerability

[CVE-2018-5391](#) - Kernel TCP "FragmentSmack" vulnerability

[CVE-2002-0510](#) - UDP IP Zero

Microarchitectural Data Sampling (MDS):

[CVE-2018-12130](#) - Fill buffers, known as ZombieLoad

[CVE-2018-12126](#) - Fallout

[CVE-2018-12127](#) - Load buffers

[CVE-2019-11091](#) - Uncacheable memory

The v7.7.0 release updates Java to version 1.8.0.201.



## Issues Fixed

The following are issues fixed in Data Center Expert v7.8.1:

- You can now launch maintenance mode from the All devices group as expected. Scheduling Maintenance Mode no longer puts unsupported NetBotz devices into maintenance mode.
- Changing device communication settings from SNMPv1 to SNMPv3 no longer resets associated notification policies to default.
- Russian characters now display as expected in the web client.
- The launch to device option now works as expected for APC devices using NMC2 cards with firmware version 6.9.4.

The following are issues fixed in Data Center Expert v7.8.0:

- The data point limit for saved graphs was increased in the web client to improve performance.
- The Sensor History graph now displays as expected when you click the graph image in a dashboard gadget.

The following are issues fixed in Data Center Expert v7.7.1:

- EcoStruxure IT registration now completes as expected.

The following are issues fixed in Data Center Expert v7.7.0:

- You can now schedule more than one maintenance mode event at a time.

## Known Issues

- **Alarms do not load in the web client in Internet Explorer or Edge**  
Alarms do not load when you access the web client from Internet Explorer 11 or Edge versions lower than 80.0. Alarms load as expected in Firefox and Chrome.  
**Note:** To update Edge to the latest version, go to <https://www.microsoft.com/en-us/edge>
- **Windows client does not restart after server change**  
After you change the server in the File > Change Server in the installed client, the client closes and does not restart. This only occurs in the Windows client. Linux client installs are not affected.
- **Linux client does not open URLs in help**  
Some links in the online help do not open a browser in the installed client. Right the link and copy the URL, then launch the page in a browser. This only occurs in the Linux client. Windows client installs are not affected.
- **NetBotz rack access cards assigned to every door**  
When NetBotz Rack Access is configured in Data Center Expert, the cards are assigned to every door on every pod instead of only those intended. Access is disabled for the unintended assignments.
- **Both doors do not unlock on NetBotz 250**  
The Select all option in the Rack Access > Control option in Data Center Expert unlocks only one door on NetBotz 250 appliances. The NetBotz 250 does not allow both doors to be unlocked at the same time.
- **APC 3.x device setting does not update**  
Device credentials are not updated in Data Center Expert for APC 3.x devices when device configuration initiated in the APC SNMP Device Configuration option is used to change the file transfer protocol from FTP to SCP.



- Some APC SNMP Device Configuration Changes in v7.3 Are Sent One Command at a Time**  
Configuration changes on APC SNMP devices with firmware v6.0.0 and higher, excluding v6.0.6 - v6.1.1, are sent to the device one command at a time. It can take up to 30 seconds per user after the "Device Configuration Status" display reports the configuration is complete to apply all the options.
- APC SNMP Device Configuration File Transfer Using SCP Fails**  
File transfer using SCP fails on some APC SNMP devices with firmware lower than AOS v6.3.3. For best results, enable FTP on the device, and set the protocol to FTP Only in the "Device File Transfer Settings" display before you select the devices you want to update. Additionally, both SCP and FTP file transfer fails on all v6.x devices with touch screens (apc\_hw06\_aos\_xxx). See the Data Center Expert documentation in the [Help Center](#) for the most recent information on APC SNMP Device Configuration.
- Repeat Email Notifications are Sent for a Single Active Alarm**  
When the Data Center Expert server approaches approximately 500 days of uptime, it is possible to receive many repeat email notifications for a single active alarm. Reboot the Data Center Expert server to stop the repeat notifications.
- NetBotz Lost Communication Email Notifications are Sent to All Users**  
Notifications for NetBotz Communication Lost events are sent to all Data Center Expert users configured with an e-mail address.
- BootMonitor Module Not Included in APC Device Firmware Update**  
The Data Center Expert server does not apply the BootMonitor module as part of the APC device firmware update.
- InfraStruxure Manager Certificates Must Be Updated Before Using InfraStruxure Manager Migration Utility**  
Before using the InfraStruxure Manager Migration Utility to migrate settings and data from InfraStruxure Manager v4.7 to the Data Center Expert v7.2.2 server and above, users must update the InfraStruxure Manager SSL certificates. Contact Technical Support for instructions: <http://www.apc.com/support/index.cfm>.
- Additional RAM for Data Center Expert Virtual Appliance with Remote Monitoring Service**  
When the Remote Monitoring Service (RMS) is enabled on a Data Center Expert virtual appliance monitoring more than 1025 devices, increasing the hardware resources to up to 8 GB of RAM is recommended.
- Data Center Expert Web Client Search Feature Supports English Only**  
The search feature in the Data Center Expert web client supports English only. Accented letters and characters that do not appear in English are not returned in the search results.
- Data Center Expert Web Client Search Parameters Require Quotes for Special Characters**  
Search strings containing special characters must be surrounded by double quotes to return results. For example, to search for a device by MAC address, the user must type "XX:XX:XX:XX:XX:XX".  
**Note:** As the user types a MAC address in the search field, the search bar displays a suggestion without quotes. Using this search suggestion will return no results.
- Data Center Expert Web Client Customized Pages Unresponsive on Older Browsers**  
Due to performance considerations, certain browsers may not display all the gadgets on a customized page in the Data Center Expert web client. Upgrading your browser to the latest version is recommended. If you use Internet Explorer, and cannot upgrade to a later version, consider using Google Chrome Frame to enable open web technologies.
- Data Center Expert Web Client Graphs Require Support for Scalable Vector Graphics (SVG)**  
The Data Center Expert web client displays graphs only on browsers that support Scalable Vector Graphics (SVG).
- Firefox Displays Data Center Expert Web Client Mobile Version on an Android Tablet**  
When the Data Center Expert web client is accessed in Firefox on an Android tablet, the mobile version is displayed. To view the tablet version, users can change the URL from <servername>/mobile to <servername>/tablet.



- NetBotz Web Client Does Not Load When Launched to a NetBotz Appliance on the Private LAN**  
 The NetBotz Web Client does not load completely when it is launched from the Data Center Expert user interface to a NetBotz appliance on the private LAN. Users accessing Data Center Expert from the public LAN must use Advanced View to connect to a NetBotz appliance on the private LAN. Alternatively, to use the NetBotz Web Client, users can connect directly to a NetBotz appliance from a system on the private LAN.
- Default Device Node Count Displayed for Data Center Expert Virtual Appliance Demo Version**  
 The Data Center Expert v7.2.x virtual appliance demo version supports up to 5 device nodes and one camera enabled for surveillance. To monitor 25 device nodes, displayed by default in the “License Keys” display, you must apply the virtual appliance activation license.
- Limitation on Number of Virtual Sensors**  
 The number of virtual sensors created can affect server performance. The recommended number of virtual sensors for a Data Center Expert server to monitor is:

  - Basic server: A maximum of 300 virtual sensors
  - Standard server: A maximum of 600 virtual sensors
  - Enterprise server: A maximum of 4000 virtual sensors
- Restore Fails When Capacity Manager v6.2 is Enabled and Capacity Tags are Configured**  
 When users perform a restore from a backup of an InfraStruxure Central v6.2, StruxureWare Central v6.3, or StruxureWare Central v7.0 server with Capacity Manager v6.2 enabled, the restore fails if capacity tags are configured. When the restore is performed on a server with the Operations key installed, the error is seen immediately. When the restore is performed on a new hardware server or virtual appliance, the server fails to boot once the Operations key is installed. Users must contact Technical Support to resolve this issue.
- Units in Graphs Included in Alarm Notifications are Displayed in English**  
 When an email, HTTP POST, or FTP alarm notification includes a graph, the units are displayed in English. The body of the email and the sensor data are displayed in the language for the locale specified in the alarm action.
- Limitations on Requests for Data Using Web Services**  
 Data requests via Web Services exceeding 3.5MB return no data.
- Data Center Expert Server Reboots While Using the InfraStruxure Manager Migration Utility**  
 The Data Center Expert server will reboot while migrating settings and data from InfraStruxure Manager v4.7 to the Data Center Expert server when the InfraStruxure Manager data log is included in the migration, or the time settings on the Data Center Expert server change because of the migration.
- Subsequent Outlet Control Commands May Fail**  
 When the user performs an outlet control command, then immediately follows it with a second command, the second command may fail. The user must wait 5 – 10 seconds to issue a subsequent outlet control command. Users can verify the command was successful in the web interface of the device.
- Limitation on Global Device Scan Intervals**  
 Users cannot set their global device scan settings to less than five minutes if there are more than 2026 devices discovered on their Data Center Expert Enterprise server. This restriction is not enforced on device-specific scan settings, but APC recommends that the same policy be applied to these settings. For servers monitoring fewer than 2025 devices, it is recommended that the default 5-minute scanning rate be used for SNMP devices, and only adjusted for small subsets of critical devices.



- **Limitation on Surveillance Settings for Cameras**

The number of cameras monitored by the Data Center Expert server, and the Camera Resolution and Target Image Capture Rate (frames per second) settings at each camera, can affect server performance. To support a large volume of surveillance data, the recommended camera settings and number of cameras for a Data Center Expert server to monitor, are:

- Basic server: A maximum of 15 cameras at 10 frames per second, 150 fps total, and a resolution of 640x480
- Standard server: A maximum of 125 cameras at 2 frames per second, 250 fps total, and a resolution of 640x480
- Enterprise server: A maximum of 250 cameras at 2 frames per second, 500 fps total, and a resolution of 640x480.

## Upgrade Procedure

The following steps are necessary to upgrade Data Center Expert v7.8.0 to Data Center Expert v7.8.1.

**IMPORTANT:** The Data Center Expert v7.8.1 update performs a data migration that takes under an hour for most systems. The data migration can take up to four hours if the system has thousands of devices and years of history. **Do not reboot the server during the update.**

**Note 1:** You must have a valid software support contract to receive the Data Center Expert v7.8.1 upgrade. If you do not, then you will need to purchase one to receive the upgrade.

**Note 2:** Data Center Expert must be at a minimum of version v7.8.0 to upgrade to Data Center Expert v7.8.1. If you are downloading Data Center Expert v7.8.1, you will need access to the Internet.

**NOTICE:** Before beginning an upgrade, remember to run a full backup on your Data Center Expert. Go to **System > Server Administration Settings > Server Backup/Restore**, create a backup entry, and then click **Start**.

1. Download the upgrade.zip file or contact Technical Support for assistance:  
<http://www.apc.com/support/index.cfm>.

**Note:** The restore.iso file may be needed for later use if a re-installation is required. See Restoring using ISO Format for instructions for restoring your data from a restore.iso file from the ISO format.

2. Extract/expand the upgrade zip file into a separate directory on the hard drive of the system that will be running the Data Center Expert Console.
3. Login to your Data Center Expert v7.8.0 server with full server access. Select **Updates** from the menu bar, then **Apply Server Update**.
4. Click **Import** and look in the subdirectory where extracted files are placed. The structure of the extracted fields should contain two folders, "BW" and "NBCCore", and an index file, "nbcpkg.lst".
5. Select the "nbcpkg.lst" file and click "Open".
6. The Upgrade/New Packages table will update indicating there is an update available for the Data Center Expert server. Check the "Install/Upgrade" option for the package(s) you want to upgrade. Click **Install Selected** to start the upgrade for the selected package(s). You will be prompted to confirm you want to proceed with the upgrade. Click **Install Update** to start the upgrade process.

**Do not reboot the server during the upgrade process.**

7. When the file transfer completes, Data Center Expert will restart and disconnect your console connection. You can point a web browser to the Data Center Expert server for status.
8. When the update is complete, point a web browser to the Data Center Expert server, and select **Install StruxureWare Data Center Expert Client**.



## Restoring using ISO Format (Data Center Expert hardware server only)

**NOTICE:** Only perform the steps in this section if directed to do so by a Technical Support technician.

**Before You Restore:** A system restore will erase all data and restore the Data Center Expert hardware server to its factory default settings. Please make sure you have a copy of all installed license keys and network settings prior to restore.

1. Download the restore.iso file to create a bootable USB key, or contact Technical Support for assistance:  
<http://www.apc.com/support/index.cfm>.
  - a. For a USB Key, follow the instructions provided in Creating a bootable USB Key (Windows or Linux machine) on page 10.
2. Place the USB key in the USB port of your Data Center Expert server.
3. Reboot Data Center Expert.
4. To boot to USB, press F11 during BIOS boot select.

**Note:** Depending on the model, servers may have a different startup look, with the option to press F11 displayed earlier or later in the boot process. For more information, see the server manufacturer instructions.

5. Select the BIOS boot menu (may be called BIOS Boot Manager, BIOS boot menu, One-time boot menu, One-shot BIOS Boot Menu, or similar).
6. Select your USB Device from the list.

The restore process takes approximately 10 minutes for the 1U Data Center Expert Basic, 15 minutes for 1U Data Center Expert Standard or 25 minutes for 2U Data Center Expert Enterprise. When the restore is complete, you will be prompted to remove the USB key and press Enter to reboot the server.

Once Data Center Expert has restarted, you may configure the Data Center Expert network settings per instructions in the Data Center Expert Installation Guide.

## Migrating a Data Center Expert hardware server to a virtual appliance

**Before You Migrate:** To migrate a Data Center Expert hardware server to a virtual appliance, you must purchase and apply an activation key. Additionally, you must contact APC Support for new node license keys and application license keys for the virtual appliance.

1. Perform a backup of the Data Center Expert hardware server, using the **Server Backup/Restore** option, accessed from the **Server Administration Settings** option in the **System** menu.
2. Deploy the demo version OVA, and configure it using the hardware equivalents for the Data Center Expert Basic, Standard, or Enterprise server from which you are migrating. **The available disk space for the virtual appliance must be greater than the disk space used by the hardware server.** You cannot restore to a virtual appliance with fewer CPU, fewer network adapters, less RAM, or less available disk space than the hardware server. See help for Deploying and configuring a Data Center Expert virtual appliance, and Data Center Expert virtual appliance equivalent configurations.
3. Perform a restore on the virtual appliance, using the **Server Backup/Restore** option, accessed from the **Server Administration Settings** option in the **System** menu. You cannot restore to a virtual machine other than the Data Center Expert virtual appliance.
4. Apply the activation key to the virtual appliance.
5. Login to the Data Center Expert client. In the "License Keys" display, accessed from the **Server Administration Settings** option in the **System** menu, apply the new node license keys and application license keys you received from APC Support.





## Creating a bootable USB Key (Windows or Linux machine)

### Instructions for a Windows machine:

1. Insert USB key (no larger than 4GB) into your system.
2. Extract the following file to a temporary directory:  
*DCExpertUsbFlashRestore\_Win\_7.8.1.zip*
3. Open a command prompt to the temporary directory and run `mkDCExpertRestoreUsbKey.bat <iso image filename>`.  
For example: `mkDCExpertRestoreUsbKey.bat c:\tmp\restore.iso`
4. Answer the prompts as appropriate.

### Instructions for a Linux machine:

1. Insert a 2GB (or larger) USB key into your system.
2. Extract the following file to a temporary directory:  
*DCExpertUsbFlashRestore\_Linux\_7.8.1.tar.gz*
3. Open a command prompt to the temporary directory and run `mkDCExpertRestoreUsbKey.sh <iso image filename>`.  
For example: `mkDCExpertRestoreUsbKey.sh /tmp/restore.iso`
4. Answer the prompts as appropriate.

### Third-party USB key scripts:

The USB key scripts used to create USB keys utilize the following software:

Software	URL	Windows	Linux
Syslinux	<a href="http://syslinux.zytor.com/">http://syslinux.zytor.com/</a>	X	X
7-zip	<a href="http://www.7-zip.org">http://www.7-zip.org</a>	X	
GNU sed	<a href="http://unxutils.sourceforge.net">http://unxutils.sourceforge.net</a>	X	

